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# **security labs**

**DIGITAL EVENT RECORDER**

**MODEL SLD215**

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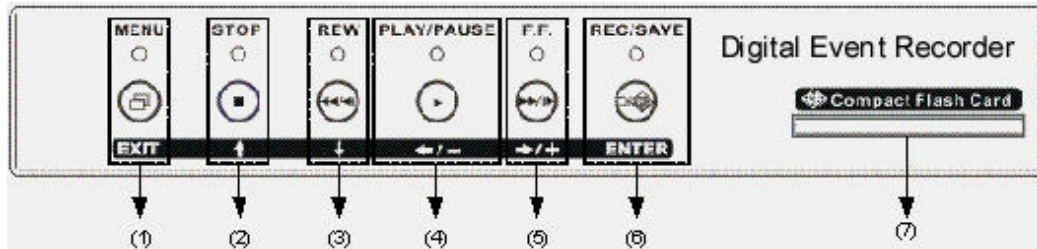
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## **FUNCTIONS**







- ⚡ HI-Resolution, low-cost, video capture machine records images in built-in SDRAM / FLASH memory, or Compact Flash Card.
- ⚡ Recording resumes automatically after power loss and return.
- ⚡ Records in a pre-scheduled period.
- ⚡ Auto backup images on recording and auto restore images on boot (from built in FLASH memory).
- ⚡ Auto detects video standards on boot.
- ⚡ One device supports both PAL and NTSC systems.
- ⚡ Auto detects video loss.
- ⚡ Image format supports full screen video data and down-sampling compression.
- ⚡ Recording video resolution / compressed quality / recording mode are adjustable.
- ⚡ Motion detection and alarm input trigger recording.
- ⚡ Motion detection window is adjustable up to full screen.
- ⚡ Recorded pictures are portable via compact flash card.
- ⚡ Can play back recorded images from compact flash card.
- ⚡ Friendly WYSWYG (what you see is what you get) user interface.

# DESCRIPTIONS

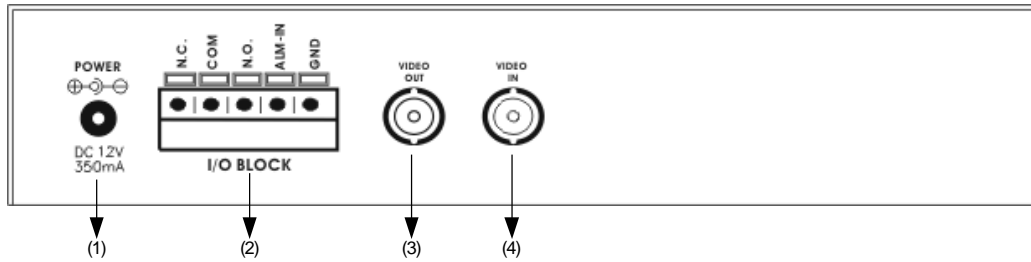
## Front Panel buttons



The buttons on the front panel perform the following functions:

- (1)  In standby mode, press this button to enter the menu/set mode. During playback mode, press this button for quick access to the search menu.
- (2)  In recording and play mode, press this button to return to standby mode. In the menu/set mode, this button will move the cursor upward.
- (3)  Press this button during play mode to “rewind” (reverse) playback. In menu/set mode, it will move the cursor downward.
- (4)  Press this button to enter the play mode or pause playback. In menu/set mode, it will decrease a value.
- (5)  In play mode, press this button to fast forward images. In menu/set mode it will increase a value.
- (6)  Press this button to enter the record mode, snap a recorded frame, or enter a sub-menu in menu/set mode.
- (7) Compact flash card slot

## Back panel and I/O ports



- (1). Power input: DC power input slot requires DC 12V 350mA  
 (2). I/O block connector

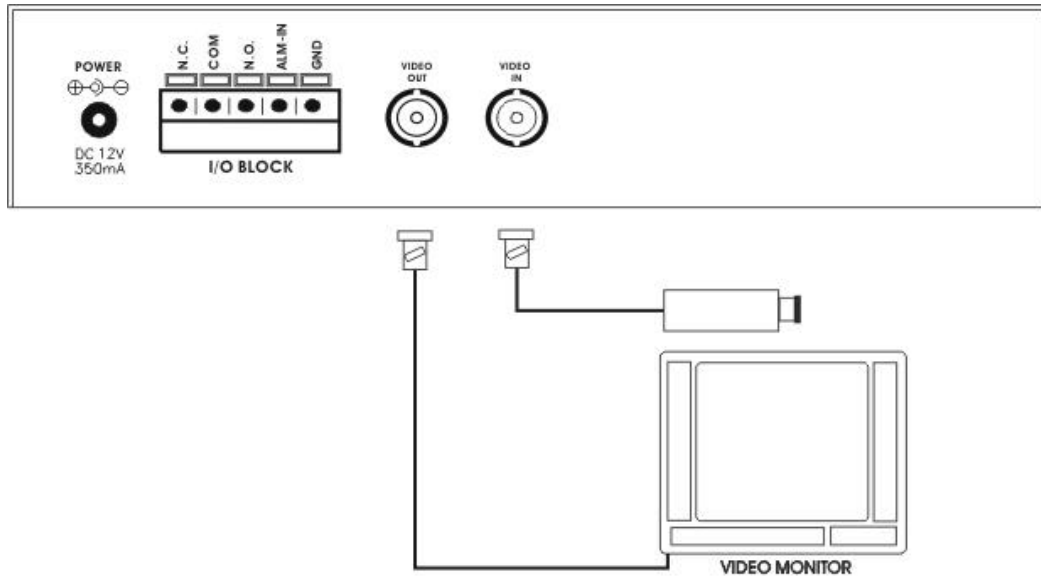
No.	Name	Function
1	N.C.	Relay Output Normal Close
2	COM	Relay Output COMmon
3	N.O.	Relay Output Normal Open
4	ALARM IN	Alarm Input
5	GND	Ground( Input trigger ground)

- (3).VIDEO OUT Connect to monitor.  
 (4).VIDEO IN Connect to composite video camera.

# INSTALLATION

## Quick installation

Connect the monitor and camera as indicated below:

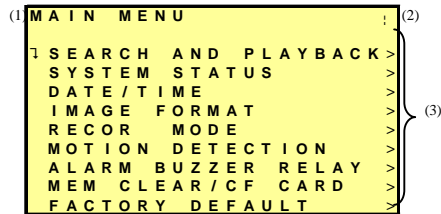


To back up images, insert compact flash card in the compact flash card slot as seen below.



# FUNCTION SETTINGS

## Main menu



- (1) Main menu menu title.
- (2) Indicator of menu levels

The maximum number of menu levels is four.

	first level menu (main menu)
	second level menu
	third level menu
	fourth level menu

### (3) Operation and setting

Press  $\uparrow$  or  $\downarrow$  button to move cursor ( $\downarrow$ ) up or down respectively or to switch between settable items.

Press ENTER button to enter the sub-menu of an item with (>) as an ending.

Press MENU button for the following results:

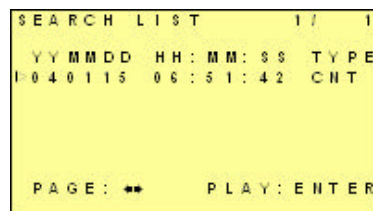
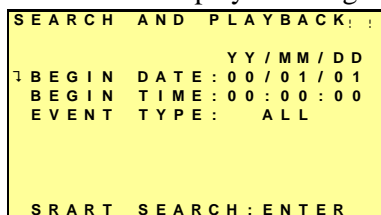
- a. Return up level menu from sub-menu.
- b. Exit main menu and return to standby mode. Only when user exits the main menu, will the user's settings be updated.

Press  $\uparrow$  or  $\downarrow$  buttons to increase or decrease the item which is blinking.

## Search and playback of images

Event search can be performed in this menu. Insert the search date, time or event time, e.g., CONTINUOUS / MOTION / ALARM / SNAPSHOT / ALL, then press

Enter button to play the images found.



## Play results

The available play results are different types of records, and are stored in the priority of; Alarm, Motion, and Continuous. Thus, only Alarm. event condition “ALM” will be indicated, if an alarm occurred during a motion, or continuous recording. To find your Motion event images, you may use the Motion event search to find motion recorded images, but these recorded images can be indicated as ALM, if an Alarm event condition occurred during the motion recording.

## SYSTEM STATUS

The following menu shows system status information. The user cannot change settings in this menu except for VIDEO SYSTEM. The video system standard, e.g., NTSC/PAL/AUTO, can be changed under this heading. Press the MENU button to return to the main menu.

```
SYSTEM STATUS V3.4.16!!
VIDEO SYSTEM : AUTO / N
RESOLUTION : SP720 * 480
IMAGE QUALITY : 6
CAPTURED PICS : 1023
REMAIN PICS : 5536
MEM FULL : OVERWRITE
ACTIVE : 00:00 - 00:00
CONTINUE : 5FPS
MOTION : 5FPS 5SEC
ALARM : 5FPS 5SEC
```

- AUTO / N Enables auto system input check (letter N implies that the video is currently under NTSC system).
- When first powered on, the system will refer to the VIDEO SYSTEM setup; but once the setting value is AUTO, the system will refer to the previous image setup.
- If the camera is not connected to the unit, and the VIDEO SYSTEM setting NTSC/PAL doesn't match with your monitor, the display of monitor will run up and down. To correct this matter, please connect a camera to lock (sync) the image on the screen. Please return to the SYSTEM STATUS section; set the VIDEO SYSTEM to AUTO, then exit the setup menu and restart the device. The system will auto detect the video input.
- Pictures that contain different recording settings for resolution and compression result in figure differences of remaining pictures available. Therefore, the numbers shown by the REMAIN PICS are for estimated reference only.

## Set system date and time

To show system time on screen, select 'ON' in the 'SHOW DATE / TIME' item. The system date and time will be shown at the right-up corner of the screen by your chosen DATE FORMAT.

```

DATE / TIME :
1 SHOW DATE / TIME : ON
DATE FORMAT : YY / MM / DD
SET DATE : 00 / 01 / 01
SET TIME : 00 : 00 : 00
    
```

- DATE FORMAT YY/MM/DD MM/DD/YY DD/MM/YY

## Image format

This menu enables image resolution and compression quality setup. These settings affect all recording modes (snap shot, continuous, motion, and alarm).

```

SYSTEM STATUS V3.416!!
VIDEO SYSTEM : AUTO / H
RESOLUTION : SP720*480
IMAGE QUALITY : 6
CAPTURED PICS : 1023
REMAIN PICS : 5536
MEM FULL : OVERWRITE
ACTIVE : 00:00 - 00:00
CONTINUE : 5FPS
MOTION : 5FPS 5SEC
ALARM : 5FPS 5SEC
    
```

- Note: Changing the RESOLUTION and IMAGE QUALITY affect the live video as you are viewing the monitor in standby mode. This will give you a preview of what to expect from your recordings.
- COMPRESSION RATE and TOTAL CAPACITY when changing the RESOLUTION and the IMAGE QUALITY, the unit will display the current image compression rate and the estimated total image capacity with the selected settings.
- TOTAL TIME computes the estimated total recording time with the selected settings.
- RESOLUTION Super (default)

Picture Size	Super (SP)	High (HI)	Normal (NM)
NTSC	720*480	720*240	360*240
PAL	720*576	720*288	360*288

- IMAGE QUALITY: 06 (default)

Image quality NO.	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Quality	low-----normal-----best								
Compression rate (estimated)	60:1	50:1	40:1	30:1	25:1	20:1	15:1	13:1	10:1

The compression rate will be affected by the complexity of different images. For detailed information, please refer to Appendix – Comparison Table of the Compression Rate section.

## Record mode

(Note: Factory defaults are underlined)

```

RECORD MODE      : :
1 SCHEDULE REC. : ON
  ACTIVE : 00:00-00:00
          SW RATE TIME
CONT. : OFF 1FPS - - -
MOTION : OFF 1FPS 5SEC
ALARM : ON 1FPS 5SEC
PIC AUTO BACKUP : ON
MEM FULL : OVERWRITE
  
```

### ? SCHEDULE RECORD ON/OFF

Recording from any mode will only be allowed when the Schedule Record is set to “ON”. This feature acts as a record protect for data that is already stored in memory.

**ACTIVE** The start and end time of a day’s scheduled record cycle. The system accepts continuous record, motion detection and alarm recording during this time period. To enable a whole day’s recording capability, the user must enter **00:00 – 00:00** as **ACTIVE** time.

### ? CONTINUOUS RECORD SETTINGS

Select from Record Mode menu – ON/OFF

5 FPS (Frames per second) / 2FPS / 1FPS

2SEC (One frame every 2 seconds) 5SEC / 10SEC / 20SEC / through **30SEC** (One frame every 30 seconds).

### ? MOTION DETECT MODE

Select from Record Mode menu – ON / OFF

Record rate – **5FPS** (Frames per second) / 2FPS / 1FPS

Record duration after motion ceases – **1SEC** / 2SEC / 5SEC / 10SEC / 20SEC / 30SEC

### ? ALARM INPUT TRIGGER

Select from Record Mode menu – ON / **OFF**

Record rate – 5FPS (Frames per second)/ 2FPS / **1FPS**

Record duration with alarm trigger – **1SEC** / 2SEC / 5SEC / 10SEC / 20SEC / 30SEC

### ? PIC AUTO BACKUP

Flash backup switch – ON / OFF

Please refer to the “Flash Backup” section in OPERATING PROCEDURES/ RECORD MODE for further details.

## ? MEM FULL

Setup option when memory full – OVERWRITE / STOP

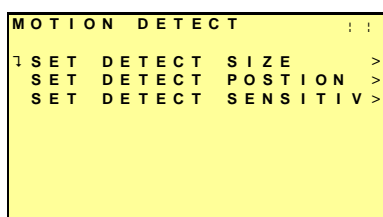
Please refer to the “Memory Full” section in OPERATING PROCEDURES/ RECORD MODE for further details.

## Motion detection

From the Main menu select **RECORD MODE**, set **MOTION** to “ON”.

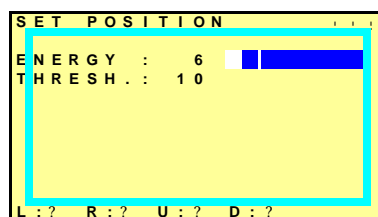
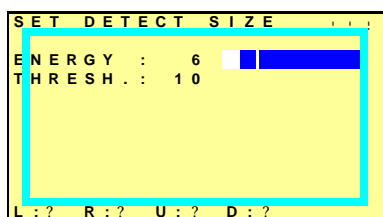
Set the desired amount of recorded frames of video per second during a motion detection recording ( 1, 2, or 5 FPS), and the amount of recording time (event duration) after detection stops (1, 2, 5, 10, or 30 seconds). Exit to the Main menu.

From the main menu select **MOTION DETECTION**



### Size & Position setup

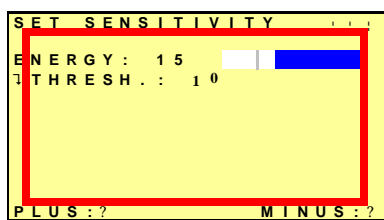
The SET DETECT SIZE allows for the size change of the detection window (area from small to large) by pressing ?\* ? \*? \*? ,and in SET POSITION page, press ?\* ?\*? \*? keys to move the detection window from left to right, up or down. After the detection window adjustment has been completed, press the ENTER key to save the settings. If you do not wish save the changes, press the EXIT key to ignore adjustment and return to the **MOTION DETECTION** menu.



This unit detects real-time image changes when the motion detection area has been enabled. When the image movement change exceeds the alert value within the motion detection area, it results in a border color change on screen. If motion detection is triggered, the detection window border becomes red, in standby mode the border is blue.

### Sensitivity setup

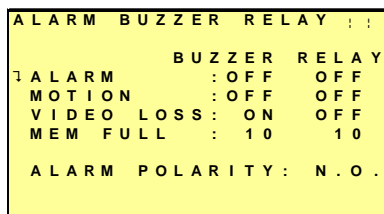
The greater the amount of movement in the detection area, shows a higher reading on the ENERGY bar indicator, and the ENERGY number becomes larger. The user may adjust the sensitivity rate threshold according to the ENERGY changes.



- ? ENERGY 0 ~ 255. This number is displayed by the unit as a reference to the amount of activity in the detection zone.
- ? SENSITIVITY 1 ~ 64 (Threshold of sensitivity), the default is **10**.

### Alarm – Buzzer - Relay

This menu is used for set up of alarm sensors, trigger buzzer, and relay output. An alarm or motion trigger can be set to sound the internal buzzer, and activate the output relay to trigger another accessory device. Use of this recorder to trigger an alarm system is beyond the intended scope of this product, and is not recommended. Connections to the output relay are done via the COM = common, and N.O (normally open) or N.C. (normally closed) terminals on the back of the unit. The current load on the relay should not exceed 2 Amps @ 12 Volts.

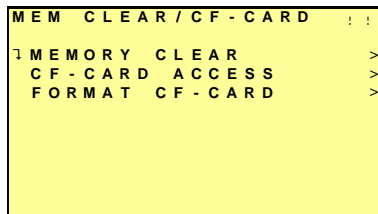


The duration of the internal buzzer and/or output relay can be set to operate after a trigger for: 0 / 10 / 20 / or 30 seconds for each mode shown in the Alarm-Buzzer-Relay menu.

The alarm input terminal can also be set to work with N.O. (normally open) or N.C. (normally closed) switches in this menu.

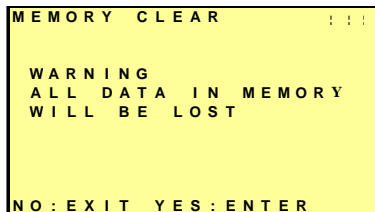
## Main memory and CF-card management

In this menu the user can clear the main memory, access CF-card memory and format CF-card.



### Memory clear

This function can clear all memory images on both SDRAM and FLASH storages.



If the user wants to backup images, please refer to the CF card backup section.

? Press Enter key to clear the memory and return to MEM CLEAR/CF-CARD page.

? Press Exit key to exit this page and return to MEM CLEAR/CF-CARD page.

### CF-card management

Press ENTER key under CF-card access item, system shows the image directory, move the cursor to your desired directory and press the ENTER key to playback, press« ? » to delete this image directory.

```
CF-CARD ACCESS 1/ 1
  YYYYMMDD      FILES
  20040110      27
  20040113      2
DEL : ←
QUIT:EXIT  PLAY:ENTER
```

```
DEL ONE DIRECTORY!!!
WARNING
ALL DATA IN THIS
DIRECTORY:
20040110      27
WILL BE LOST
NO:EXIT YES:ENTER
```

## CF-CARD FORMAT

Execute this function to format the CF-card. Be very careful, as this action will delete all files in the CF-card.

```
CF-CARD FORMAT  : :
WARNING
DATA ON CF-CARD
WILL BE LOST?
NO:EXIT YES:ENTER
```

## Return to factory default

Under the Main Menu, this function will not clear any images in the memory, but reset the system setup to the factory default.

```
FACTORY DEFAULT  : :
RECALL DEFAULT NOW?
NO:EXIT YES:ENTER
```

- ? Press Enter key enter factory default
- ? Press Exit key to leave this menu and return to main menu.

# OPERATING PROCEDURES

## Power on

Each time power is applied to the unit, the master controller will proceed with self-testing.

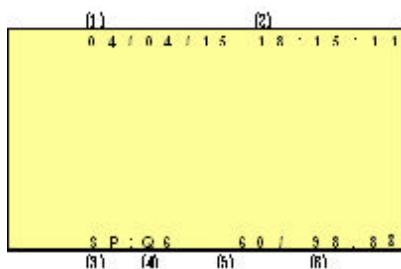
- a. The system will detect the video input and self select NTSC or PAL operation.
- b. System restores recent images from flash to SDRAM.
- c. The system checks the recording schedule, and begins recording if a time has been scheduled, otherwise it enters the normal display mode.

If the alarm buzzer is triggered, the user may press any key to stop the beep, without interrupting the actual recording.

## Normal display mode

This mode enables the user to view real-time monitoring. In this mode, the system may be changed to any working status; enter record mode by pressing REC key, enter play mode by pressing the PLAY key and enter the menu mode by pressing the MENU key. In play mode or record mode, the user can press the STOP key to stop playing or recording and return to normal display mode, and in the main menu press the MENU key, to return to normal display mode.

## Normal (standby) screen display



- (1) Date Year data from 2000 to 2099, Month data from 1 to 12, Day data from 1 to 31, and the display format may be one of YY/MM/DD MM/DD/YY DD/MM/YY on your Date setting.
- (2) Time Current time
- (3) Resolution SP (Super), HI (High), NM (Normal)
- (4) Compression quality: Q1(low) ~ Q9(best)
- (5) Pictures that have been recorded in memory
- (6) The percentage of memory remaining.

(7) Record mode

The REC/SAVE key must be pressed for continuous, motion, or alarm recording to be activated. Pressing the STOP key will not allow the unit to automatically record, until the REC/SAVE key is pressed once again.

The system also supports a snapshot function. Once in the record mode, pressing the REC/SAVE stores one picture, pressing the REC/SAVE key without releasing it, the system will enter full speed recording mode as long as the REC/SAVE key is held down. The approximate recording rate is shown on the table below:

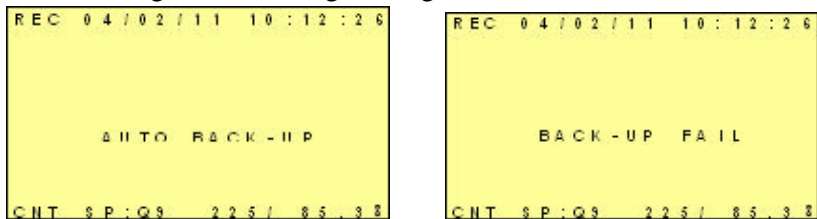
Resolution	Record Rate
SP	5 pic/sec
HI	8 pic/sec
NM	10 pic/sec

**Flash Backup**

This recorder contains no mechanical moving parts, such as a hard drive. All images are stored in the 128 Meg of SDRAM, and 2 Meg of Flash Memory. SDRAM requires a constant supply of electricity to maintain the information held in its memory. As an added bonus, the start of each recording, and a frame of video every fifth second of each recording, is automatically copied to the Flash Memory of this unit. This feature can be activated from PIC AUTO BACKUP function, found under RECORD MODE of the MAIN MENU. When the system restarts after a power loss, it loads the saved images from the Flash Memory to the SDRAM for viewing.

The space capacity for flash memory picture backup is 1.5MB. The system operates similar to continuous recording, thus when the memory is full the system will not be stopped. Old data is automatically overwritten from the start in the Flash Memory bank, keeping the most updated information available. If the resolution setting for the recorder is 720\*240 and quality is 6, the system is able to save approximately 140 pictures.

When recording, the following message will be shown on the screen as below:

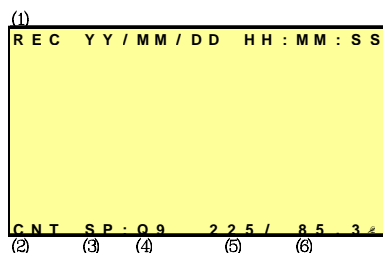


Note: Due to inherent limitations of Flash Memory , when the write cycle per sector reaches over 100 thousand, the accuracy of the data cannot be guaranteed.

Therefore, when the system detects abnormality in the flash operation, it will disable this backup function and show the BACK-UP FAIL message.

- ? When the image size is over 64KB, the system cannot support backup. This can occur when the images contains a resolution of 720\*480 and quality of Q9 or Q8.
- ? Please don't enable PIC AUTO BACKUP again after the system has disabled this function.

### Record screen display



(1) Record mode System on schedule record or manual record

(2) Trigger event type

Continuous Record CNT Adjusted under MAIN MENU RECORD MODE

Motion Detection Record MD: Adjusted under MAIN MENU RECORD MODE

Alarm Record ALM: Adjusted under MAIN MENU RECORD MODE

Snapshot Record SNP: With record mode on, press REC key to take a snapshot

These symbols are displayed only when images are being saved.

(3) Resolution SP / HI / NM - detail reference under IMAGE FORMAT

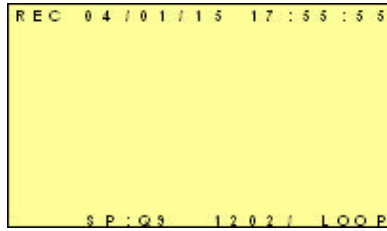
(4) Compress Quality Q1 ~ Q9 - detail reference under IMAGE FORMAT

(5) Number of pictures that are recorded in memory

(6) The remaining percentage of total memory left in SDRAM, from 100% to 0%

### MEMORY FULL:

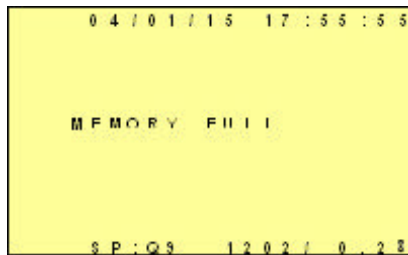
(1) OVERWRITE RECORD When the memory is full, the system will not stop recording. Old data is automatically overwritten from the start of the memory bank.



? LOOP – Is shown to indicate that older pictures in memory are being overwritten.

(2) STOP RECORD: When memory is full, the system will stop recording.

The following message will be shown on the screen below:



? The remaining space may not display 0% (e.g.: When the SYSTEM MEMORY is full, the remaining space may contain about 0.3%. Because 0.3% space is too small to record one whole image, the system stops recording).

Note: While the unit is recording, if memory usage mode is in “overwrite” and the memory storage becomes full, the unit will automatically show ‘LOOP’ on the screen.

Press the MENU key to enter MEM CLEAR/CF-CARD / MEMORY CLEAR menu to clear memory data. When the user wants to search for newer desired images, then enter SEARCH AND PLAYBACK.

## Playback mode

The user may press the PLAY key to execute playback, by the following cases stated below:

- a. In normal display mode when pressing the PLAY key, it plays the image files by memory format.
- b. Enter the SEARCH AND PLAYBACK section, execute the search and playback function. For detailed information, please refer to SEARCH AND PLAYBACK section.
- c. Enter the CF-CARD ACCESS section, For detailed information, please refer to CF-CARD ACCESS section.

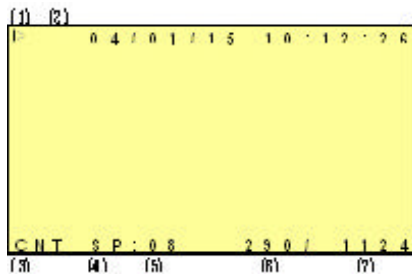
## Stop playback

In the playback mode press the STOP key to stop the playback and return to the normal display (standby) mode.

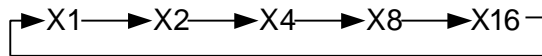
When playing back from the SEARCH AND PLAYBACK page, pressing the MENU/EXIT key to returns you to the SEARCH AND PLAYBACK page, and another search condition can be initiated.

When playing back from the CF-CARD ACCESS page, press the MENU/EXIT key to return to the original page, and choose your desired directory images.

## Playback screen display



(1) Playback speed



(2) Playback status

- ↵↵ : Play
- ↵↵ : Fast Forward play
- ↵↵ : Fast reverse play
- ↵↵ : Pause

(3) Event type CNT / MD / ALM / SNP

(4) Resolution SP / HI /NM

(5) Compression

(6) Index of the playback list

(7) Total images: playback - search and playback

Assigned CF card directory total images CF card directory playback

## CF card backup

When you want to save images to the CF card, you must first make sure that the CF card is in the CF card slot. In the playback mode press the PLAY/PAUSE to pause playback and repress REC key to save this image to the CF card.

The system builds a directory when saving the images onto the compact flash card and establishes a sub-directory (the date of the recorded images), it is constructed according to hour, minute, second, and event type (e.g.:184530EC.jpg, meaning that this image was produced at 18:00 o'clock, 45 minutes and 30 seconds, event type = continuous).

- Please do not take out the compact flash card form the CF card slot, when saving the images onto the CF-card, as it may destroy the file system (the monitor will display SAVING TO CF).
- The table below lists the CF-card operational messages. They will be shown on screen for 3 seconds.

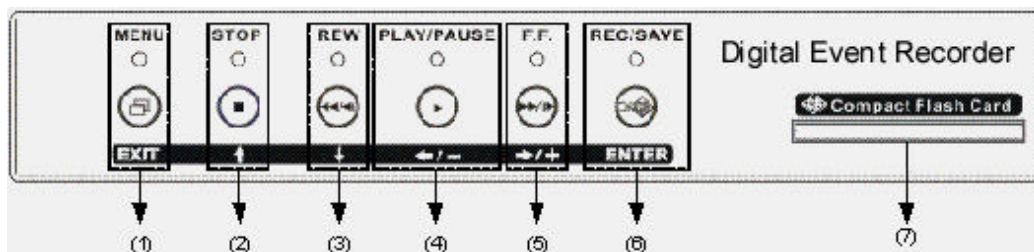
SAVING TO CF....	Image is saving to CF card
CF IS NOT PRESENT	CF card is not present or can't recognize this card
CF DISK FULL	CF card is full
CF IS NOT FOR CAPBOX	CF card is present but can't find CAPBOX directory
CF ERROR	I/O error or file system error

? Q: Why is the CF-card perfectly normal when used with a Digital Camera, but not with the Digital Event Recorder?

A: (1) The System File could be different: The Digital Event Recorder accepts only FAT12 and FAT16 CF-card system. Please execute MEM CLEAR/CF-CARD / FORMAT CF-CARD function or use a PC to format the CF-card to FAT16 system.

(2) The System File could be damaged: The Digital Event Recorder does not provide CF-card scan disk. Therefore if the CF-card system becomes damaged, it becomes useless to the Digital Event Recorder. Try formatting the MEM CLEAR/CF-CARD / FORMAT CF-CARD, or use your PC to implement card repair.

## Save All Recorded Images to Compact Flash Card



1. With the unit in STOP mode (STOP LED Illuminated only), insert a Compact Flash card into the Compact Flash Card Slot (7).

2. While still in STOP mode, press and hold the STOP button, then press the REC/SAVE

button with the STOP button still depressed.

3. When the saving process has begun, the monitor screen will display the continuously flashing message “SAVE ALL TO CF CARD”

4. During the saving process, the REC/SAVE LED will continuously flash until the process is completed. The remaining LEDs (buttons 1 through 5) are used as a status bar to indicate the progress of the saving process. Each LED from left to right represents 20% completion of the saving process. Therefore, when just the far left LED is illuminated, the process is 20% complete. When the left two LEDs are illuminated, the process is 40% complete, and so on until all five LEDs are illuminated indicating 100% completion of the saving process.

5. The CF card will begin filling with images from the recorder starting with the most recently recorded images. This is to allow for a recent event (accident, incident, theft, etc.) to be easily archived without the use of a monitor. If the CF card used does not have sufficient storage space to save all of the images from the recorder, only the most recent images will be saved until the CF card is full.

6. It may take up to 20 minutes to save an entire 128 MB of images due to the limited data transfer rate to the CF card. You may stop the saving process at any point by pressing the STOP button.

7. The “SAVE TO CF CARD” function will not affect the contents of the recorder’s internal memory in any way. All images stored in the recorder’s internal memory will be retained until the next time the unit is powered off.

## SPECIFICATION

Video Input	1 Vp.p. / 75 ohm Back Panel:1 CVBS IN (BNC)
Video Output	1 CVBS OUT (BNC, 1 V p.p. / 75ohm)
Video Input	Interlace dual field video (NTSC or PAL)
Recording Resolution	NTSC: 720*480 / 720*240 / 360*240 PAL: 720*560 / 720*280 / 360*280
Image Quality Levels	9 (compress rate from 10 to 60)
Recording Modes	Continuous / Motion Detection / Alarm In / Manual Snapshot
Playback Speeds	X1 / X 2 / X 4 / X 8 / X 16
Picture Search Function	By Date & Time / Event Type
Motion Detection Setting	Detected Area: 8x8~full screen (8pix/step). Detect sensitivity:0~255
CF Card Function	Save / Playback / Format
Maximum Snapshot on Recording	7 pics/sec (N:720*480, P:720*560) ~ 30 pics/sec(N:320*240, P:360*280)
Playback Function	Normal / Fast Forward / Fast Rewind / Pause / Step Forward / Step Rewind
Storage Capacity	128 MB SDRAM & 2MB FLASH RA
Compact Flash Card File System	FAT16
Power Consumption	12V / 350mA (Not including external camera)
Dimensions	210mm(L) x 220mm(W) x 44mm(H)

# Appendix–Comparison Table of the Compression Rate

Storage Capability of Built-In SDRAM (Approximate Pictures)

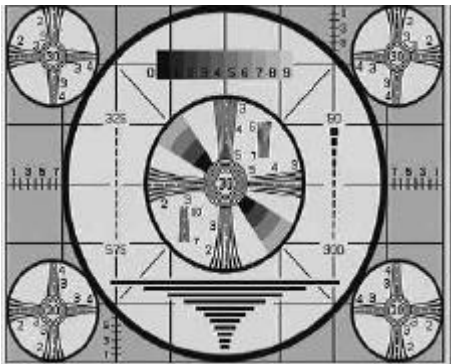
EIAJ TEST CHART A (DNP)

Quality Level	Approximate Compression Rate	NTSC			PAL		
		720*480	720*240	360*240	720*560	720*280	360*280
9	8~14	1467	3000	6847	826	2096	5030
8	12~17	2078	3900	7825	1239	2724	5868
7	18~25	3056	5100	9781	1859	3772	7545
6	24~33	4034	6800	13200	2583	5030	10480
5	30~37	4500	8000	15161	3099	6288	12576
4	36~44	5379	9500	17606	3823	7545	15091
3	44~54	6650	12200	21522	4959	9851	18446
2	54~60	7400	14500	26409	5683	11737	23057
1	63~72	8803	16500	30819	7026	13625	27250

STANDARD COLOR-BAR CHART (DNP)

Quality Level	Approximate Compression Rate	NTSC			PAL		
		720*480	720*240	360*240	720*560	720*280	360*280
9	15~22	1834	4157	10760	1239	3144	8384
8	17~28	2689	5600	13694	1756	4192	11318
7	28~38	4524	8559	17606	2893	6707	15931
6	46~51	6235	11251	22990	4339	10271	21380
5	54~62	7214	14120	26409	5166	12996	24735
4	61~72	8314	15832	29834	6509	15062	27672
3	70~86	10020	18800	33424	8576	18027	31440
2	78~92	10822	21204	35000	9506	19913	35000
1	85~104	12202	22905	35000	10746	21380	35000

\* The above tables are the approximate estimated values from the two diagrams below (for reference).



EIAJ TEST CHART A (DNP)



23 STANDARD COLOR-BAR CHART (DNP)